Supplementary Data3 20% Aware Trials Control (#21740)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
We examine a control condition to an experiment in conscious and non-conscious processing in human adults. In the current control we are testing whether participants will be able to learn to use an incongruent conscious cue in a guessing task when its diluted by multiple non-cued trials.

3) Describe the key dependent variable(s) specifying how they will be measured.
The dependent variable will be choice accuracy. Participants will be presented with two treasure chests on the left/right sides of the screen, and only one of which has a hidden reward. Participants must guess which side has the reward, and the percent of correct responses will be measured. We will test the accuracy of cued trials (20% of the trials) vs. non-cued trials (80%) of the trials. We anticipate the participants who become aware of the cues will be able to learn and use the conscious incongruent cues even though these are diluted and hidden within many non-cued trials. In contrast, for participants that will not be aware of the stars (as evident by their self-reports), we rather anticipate that they will likely be below chance in the cued trials (following more often rather a congruent response). We thus anticipate that participants who become aware of the cue, will learn this relatively quickly and become above chance in the cued trials and be at chance in the non-cued trials. In addition, we will also estimate the slopes of learning in choice accuracy of cued and non-cued trials. We anticipate that in the cued condition the learning slope will be significantly positive, starting from a below random performance and increase quickly to ~100% (for participants who become aware of the cues). while in the non-cued trials we anticipate that the slop will be close to zero. Participants will be asked at the end of the experiment if they have used any strategy to complete the task, and we will count the number of participants reporting to strategically go to the opposite of the cue.

4) How many and which conditions will participants be assigned to?
Participants will first perform in a conscious congruent block with 100% conscious cues, as in the original experiment and then participate in the guessing game with 80%of trials with just masked treasure chests, and 20% of trials with conscious cues masked after 250ms.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
All of the following analyses will be performed separately in the cued- and non-cued conditions and separately for participants who become aware of the cues and for participants who will not become aware of the cues (as evident by their self-reports), in addition to an analysis on all participants.
(a) We will analyze performance accuracy deviation from chance (50%) using a one sample t-test as well as a test of the intercept in mixed models (a mixed logistic model with a random intercept for each participant). In addition, in mixed models we will also test the possible effects of gender, and trial order, though we consider these tests exploratory.
(b) will also perform categorical tests of participant scores. Specifically, we will compare the ratio of participants with higher than 50% accuracy and below between conscious and non-conscious conditions compared to expected with a chi square test.
(c) For a higher resolution of participant scores, we will compare expected participant distribution of performance scores in the two extreme quadrants expected to include about ~25% of participants as predicted by a binomial distribution of participants performing at random 50%. For example, with 385 trials 24% of participants are expected to obtain an accuracy score at or above 52% by chance (or at or below 48%). We will test if a higher proportion of participants then expected in the cued condition score at or above 52%, and if a higher proportion of the unaware participants in the conscious condition score at or below 48%.
(d) Results allowing, we will perform a higher confidence analysis and compare the expected proportion of participants scoring in the most extreme <10% of a random distribution, with scores considered to be significant or marginally significant at the individual participant level. For example, with 385 trials scores at above below 54% are very rare and are expected to emerge by chance in only <10% of participants. We will test if higher proportion of the unaware participants in cued condition score as extreme, or the equivalent <46% in unaware participants.
(e) We will calculate the ratio of participants orally reporting to have used a strategy to go to the opposite location of the cue.
(f) we will estimate and compare the learning slopes in the different conditions.
(g) we will also analyses the binomial probability of the accuracies and calculate a binomial test p value in 385 trials for each participant separately.
(h) we will also conduct all of the above analysis only for the last trial block as a representation of the accuracy after the learning (if any) has already occurred.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

(a) Participants will be excluded if they fail to perform at or above 65% in the first conscious congruent condition.
(b) Participants will be excluded if they fail to complete at least half of the task.
(c) Specific trials will be excluded if the participant made a response longer or shorter than 3 standard deviations in reaction time

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
Since this is a control auxiliary experiment, we will test only 12 participants.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
Nothing else to pre-register.